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EXAMINER

BARBEE, MANUEL L

ART UNIT PAPER NUMBER

2857

DATE MAILED: 08/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/800,515

Applicant(s)

YAGI ET AL.

Examiner

Manuel L. Barbee

Art Unit

2857

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 15 is/are allowed.
- 6) ☒ Claim(s) 1-14 and 16-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 5-14 and 16-25 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Independent claims 5, 9, 10, 16, 19, 22 and 25 all contain limitations referring to "a change with time-lapse of an output characteristic" or "a change with time-lapse of a reference output characteristic". The claims have limitations for a measurement of "a change with time-lapse of an output characteristic", and this measurement is compared with a reference measurement of the same type to diagnose a photovoltaic power system. Figures 9-12 show comparisons between measured values and reference values for particular parameters of a photovoltaic power system measured over a range of time; however, the comparison is between the values of the parameters measured at the same time (page 26, line 22 - page 29, line 20). Values of parameters may be measured periodically over an hour and averaged but there is no calculation, measurement or comparison of change of the parameter over time (page 13, lines 18-25). The phrase "change with time-lapse" is not found in the specification. Therefore, the specification contains no description for

calculating, measuring or comparing a change with time-lapse of an output characteristic or a change with time-lapse of a reference output characteristic.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

4. Claims 5, 8-10, 14, 16, 17, 19, 20, 22 and 25 are rejected under 35 U.S.C. 102(a) as being anticipated by Takehara (US Patent No. 5,669,987).

With regard to storing a measurement result of a change with time-lapse of an output characteristic of a photovoltaic power system and diagnosing the abnormality/normality of the photovoltaic power system based on the measurement, as shown in claims 5, 9, 10, 16, 17, 19, 20, 22 and 25, Takehara et al. teach determining a variation ratio of electrical parameters of a solar cell and using this measurement to determine abnormality by comparing to a reference variation ratio (col. 2, line 55 - col. 3, line 19; col. 8, lines 11-53; Fig. 12). Output is loaded into a computer and recorded on a disk (col. 7, line 61 - col. 8, line 10). With regard to an installation condition as shown in claims 5, 19 and 25, Takehara et al. teach taking into account installation conditions (col. 6, lines 14-22). With regard to diagnosing the power system normal only if the output is greater than a first predetermined value and lower than a second predetermined value, as shown in claim 25, Takehara et al. teach diagnosing abnormal solar cells for relatively low and relatively high outputs (col. 2, line 55 - col. 3, line 4)

With regard to using a past measurement, as shown in claims 9 and 22, comparing the past measurement with a current measurement to determine abnormality, as shown in claims 5, 10, 16, 19 and 25, Takehara et al. teach comparison with a slope known from research (col. 8, lines 11-45).

With regard to the output characteristic including direct current voltage, as shown in claims 8 and 14, Asaoka teaches measuring the output voltage of the solar battery (Abstract).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 2, 4, 6, 11, 12, 18, 21 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takehara et al. (US Patent No. 5,669,987) in view of Takeda (US Patent No. 5,594,313).

With regard to measuring an output characteristic of a photovoltaic power system and comparing the measurement with a reference characteristic and diagnosing the normality/abnormality of the photovoltaic power system, as shown in claims 1, Takehara et al. teach measuring an output characteristic of at least two solar cells and comparing the measurements to diagnose whether a solar cell is abnormal (col. 2, line 24 - col. 3, line 19. With regard to the reference characteristic being obtained in accordance with an installation condition and configuration of the photovoltaic power system, as shown

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in claims 1, Takehara et al. teach taking into account a certain installation condition including position of the strings or arrays (col. 6, lines 14-21). With regard to diagnosing the power system normal only if the output is greater than a first predetermined value and lower than a second predetermined value, as shown in claim 1, Takehara et al. teach diagnosing abnormal solar cells for relatively low and relatively high outputs (col. 2, line 55 - col. 3, line 4).

Takehara et al. do not teach that the installation condition includes topography of the installation site and meteorological conditions, as shown in claim 1. Takehara et al. do not teach that the installation condition is installation site, direction or angle or configuration, as shown in claim 2. Takeda teaches taking into account the surrounding area and grounds, buildings and elevation, which are all topographical conditions (col. 1, lines 45-49). Takeda teaches taking into account weather and temperature, which are meteorological conditions (col. 1, lines 24-41). Takeda teach taking into account the seasons and latitude or direction (col. 1, lines 16-30). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the abnormality detection method, as taught by Takehara et al., to include calculating the capacity in many installation conditions as taught by Takeda, because then the solar cell would have been used in many installation sites (Takeda, col. 2, lines 36-41).

With regard to the reference output characteristic and the output characteristic including voltage or current, as shown in claim 4, Takehara et al. teach measuring and comparing voltage and current (col. 4, line 53 - col. 5, line 4).

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Takehara et al. teach all the limitations of claim 5 upon which claim 6 depends and claim 10 upon which claim 11 depends. Takehara et al. do not teach that the installation condition is installation site, direction or angle or configuration, as shown in claim 6, or that the reference output is obtained differently for each period of time among the plurality of periods of time gained by dividing a year. Takeda teaches taking into account weather and temperature, which are meteorological conditions (col. 1, lines 24-41). Takeda teach taking into account the seasons and latitude or direction (col. 1, lines 16-30). Seasons divide the year. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the abnormality detection method, as taught by Takehara et al., to include calculating the capacity in many installation conditions as taught by Takeda, because then the solar cell would have been used in many installation sites (Takeda, col. 2, lines 36-41).

Takehara et al. teach all the limitations of claim 10 upon which claim 12 depends. Takehara et al. does not teach excluding the measurement from subsequent reference output characteristic when the measurement is abnormal and including the measurement when it is normal, as shown in claim 12. The Examiner takes official notice that it is well known to only include normal measurements in reference calculations. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the snow coverage detector, as taught by Asaoka, to calculate the reference including only normal measurements, because then the reference value would not have been skewed by an abnormal measurement.

Takehara et al. teach all the limitations of claim 16 upon which claim 18 depends, of claim 19 upon which claim 21 depends and claim 22 upon which claim 24 depends. Takehara et al. do not teach measuring solar radiation, as shown in claims 18, 21 and 24. Takeda teaches measuring solar radiation (col. 1, lines 17-21). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the snow coverage detector, as taught by Takehara et al., to include calculating the capacity in many installation conditions as taught by Takeda, because then the solar cell would have been used in many installation sites (Takeda, col. 2, lines 36-41).

7. Claims 7, 13 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takehara et al. in view of Asaoka (Japanese Patent Publication No. 2000022192 to Mitsubishi, English Translation).

Takehara et al. teach all the limitations of claim 5 upon which claim 7 depends, of claim 10 upon which claim 13 depends and claim 22 upon which claim 23 depends. Takehara et al. do not teach diagnosing the cause, as shown in claims 7, 13 and 23. Asaoka teaches determining whether snow is covering the light receiving surface (Abstract). It would have been obvious to one of ordinary skill in the art at time the invention was made to modify the abnormality detection method, as taught by Takehara et al., to include determining whether snow is covering the light receiving surface, as taught by Asaoka, because then a cause of failure could have been identified and corrected.

8. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takehara et al. in view of Takeda as applied to claim 1 above, and further in view of Asaoka.

Takehara et al. and Takeda teach all the limitations of claim 1 upon which claim 3 depends. Takehara et al. and Takeda do not teach diagnosing the cause of abnormality based on the comparison result, as shown in claim 3. Asaoka teaches determining whether snow is covering the light receiving surface (Abstract). It would have been obvious to one of ordinary skill in the art at time the invention was made to modify the abnormality detection combination, as taught by Takehara et al. and Takeda, to include determining whether snow is covering the light receiving surface, as taught by Asaoka, because then a cause of failure could have been identified and corrected.

Response to Arguments

9. Applicant's arguments filed 23 June 2003 have been fully considered but they are not persuasive.

Applicant states that Takehara et al. does not teach the limitations of claim 1, which include newly added limitations for installation conditions that include a topography of an installation site, meteorological conditions and configuration of the photovoltaic system. Takehara et al. teach taking into account a certain installation condition including position of the strings or arrays (col. 6, lines 14-21). Takeda teaches taking into account the surrounding area and grounds, buildings and elevation, which are all topographical conditions (col. 1, lines 45-49). Takeda teaches taking into account weather and temperature, which are meteorological conditions (col. 1, lines 24-41).

Independent claims 5, 9, 10, 16, 19, 22 and 25 were amended to include limitations referring to "a change with time-lapse of an output characteristic" or "a

change with time-lapse of a reference output characteristic". Takehara et al. teach determining a variation ratio of electrical parameters of a solar cell and using this measurement to determine abnormality by comparing to a reference variation ratio (col. 2, line 55 - col. 3, line 19; col. 8, lines 11-53; Fig. 12). The variation ratio is a calculation of change over time or change with time-lapse.

Allowable Subject Matter

10. Claim 15 is allowed.

11. The following is a statement of reasons for the indication of allowable subject matter: Takehara et al. do not teach a method for diagnosing a photovoltaic power system that comprises obtaining a reference output characteristic for a first photovoltaic power system based on a measurement result of output characteristic of a second photovoltaic power system where the two photovoltaic power systems are installed at different sites, measuring an output characteristic of the first photovoltaic power system, comparing the reference output characteristic with the measured output characteristic and diagnosing the first photovoltaic power system based on the comparison.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Manuel L. Barbee whose telephone number is 703-308-0979. The examiner can normally be reached on Monday-Friday from 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on 703-308-1677. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-0976.

mlb
August 15, 2003


MARC S. HOFF
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